

Copperbelly Water Snake (Northern Population) Recovery Outline

Species Name: Copperbelly Water Snake (*Nerodia erythrogaster neglecta*)

Classification: Threatened (northern population segment)

Federally listed: January 29, 1997

Recovery Priority Number: 3C

Population Trend: Decreasing

Lead Region/Cooperating Regions: R3

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Figure 1. Copperbelly Water Snake.
Photo by M. Myers

Purpose and Use of this Recovery Outline:

In the interim between listing and recovery plan approval, a recovery outline provides preliminary strategies for conservation that conform to the mandates of the Endangered Species Act (ESA), as amended. It organizes near-term recovery actions, provides a range-wide conservation context for USFWS decisions, and sets the stage for recovery planning and stakeholder involvement.

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Note on Information Sources and Treatment of Uncertainties:

This recovery outline is based on best available scientific and commercial data, including the original listing decision (USFWS 1997, 62 FR 4183, January 29, 1997). Research needed to address information gaps is described in this document and will be part of the implementation table in the recovery plan. For issues in which there is uncertainty associated with the species' conservation needs, caution will be exercised until such uncertainty can be resolved.

Species Information

Historic Distribution:

The Copperbelly Water Snake is a subspecies of the Plain-bellied Water Snake (Conant 1949). The historic distribution of the Copperbelly Water Snake is clouded by the fact that until Conant (1934, 1949) brought attention to the uniqueness of the subspecies, museum specimens were often miscatalogued as the Northern Water Snake (*Nerodia sipedon*). Correction of the mislabeled specimens is difficult due to the rapid fading of colors of preserved specimens. Therefore, the original range and distribution of the Copperbelly Water Snake is not precisely known.

After recognition as a subspecies, the known historical range was described by Schmidt (1953) as “south central Michigan and northwestern Ohio, southwestward through Indiana to extreme southeastern Illinois and adjacent Kentucky.” There was a notable gap in the location records between the southern and northern population segments.

Distinct Population Segments:

Today the distribution is divided into a southern population segment in southeastern Illinois, western Kentucky, and southern Indiana, and an isolated northern population segment in northern Indiana, southern Michigan, and northwestern Ohio. These populations qualified as distinct under the USFWS’s Policy Regarding the Recognition of Distinct Vertebrate Population Segments under the ESA (USFWS 1996, 61 FR 4722, February 7, 1996). The following designations were adopted for the two populations segments:

Northern Population Segment (NPS)-Michigan, Ohio, and Indiana north of 40 degrees north latitude (approximately Indianapolis, IN).

Southern Population Segment (SPS)-Illinois, Kentucky, and Indiana south of 40 degrees north latitude.

The determination of two distinct population segments enabled the USFWS to treat each segment as a separate entity that may be listed under the ESA. The USFWS determined that Conservation Agreements signed in Kentucky, Illinois, and Indiana significantly reduced the threats from surface coal mining (the predominant threat) for the southern population segment. Therefore, the USFWS determined that listing the southern population segment was not warranted. Threats affecting the northern population segment were not addressed in the Conservation Agreements, and the USFWS determined that the northern population warranted listing as a threatened species. This recovery outline will focus only on the listed entity (i.e., the northern population segment) of the Copperbelly Water Snake.

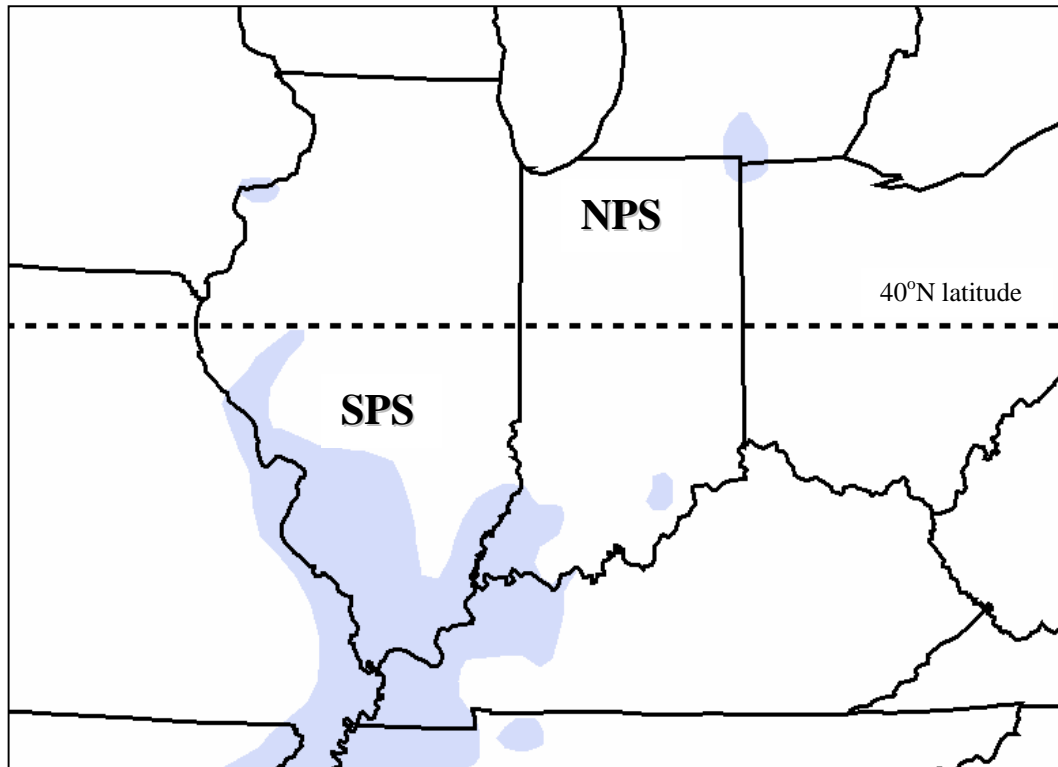


Figure 2. Geographic separation of the northern and southern population segments of the Copperbelly Water Snake (distribution shown is for illustrative purposes only).

Current Distribution:

The Copperbelly Water Snake occurs only in a few small, scattered and isolated local population clusters in southcentral Michigan, northeastern Indiana and northwestern Ohio (Sellers 1991; USFWS 1997, 62 FR 4183, January 29, 1997). These local population clusters consist of snakes within connected, or nearly connected, habitat units. In some cases, these populations are able to occasionally interbreed and are thus genetically linked by dispersal. We may refer to these as metapopulations. Not all population clusters are currently considered to be metapopulations, however, because in some cases impermeable barriers prevent adjacent populations from interbreeding.

At the time of listing (1997), the Copperbelly Water Snake was identified as consisting of eight local population clusters, based on survey data in the ten years prior to listing. The majority of the populations were found on private property. Two of the eight clusters had a portion of their area protected by State ownership, one was partially owned by a private conservation organization, and five were on private property.

In the year prior to listing, surveys indicated a decline, as Copperbelly Water Snakes were found to occur in only five local population clusters (USFWS 1997, 62 FR 4183, January 29, 1997). Since listing, many surveys have been conducted throughout the

northern range of the species. Recent surveys (2001-2004) have shown the extent of range and numbers of Copperbelly Water Snake are less than the estimates during the listing process.

Indiana and Ohio:

Surveys conducted in Indiana and Ohio (2001-2003) indicated that there is likely only one substantive metapopulation remaining in Indiana and Ohio. Copperbellies were observed at only one locality outside of this metapopulation (Kingsbury et al. 2003). The metapopulation found in Indiana/Ohio also extends into southern Michigan.

Populations farther west in Indiana appear to have been extirpated. Surveys in 2003 found the habitat to be all but gone, and no individuals were found. The most recent reliable records are from the 1980s.

Michigan:

Michigan Natural Features Inventory (MNFI) has conducted extensive surveys of suitable habitat throughout the historic range in Michigan. Historically, the Copperbelly Water Snake was known from 13 sites or occurrences in seven counties in southern Michigan (Branch, Calhoun, Cass, St. Joseph, Eaton, Hillsdale, and Oakland) (Lee et al. 2002). Of the 13 occurrences, only three were thought to contain viable reproducing populations (two in Hillsdale and one in Cass and St. Joseph counties), based on surveys conducted prior to 2001 (Y. Lee, MNFI, pers. comm., 2003). During surveys conducted in 2001-2003, three Copperbelly Water Snake occurrences were documented in extreme southern Hillsdale County, with evidence of reproduction found for two of the occurrences. Surveys were unable to reconfirm Copperbelly Water Snakes at the third site previously considered viable in Cass and St. Joseph counties. The three extant occurrences in Hillsdale County may represent one metapopulation (which extends into Indiana/Ohio), as there is apparently suitable habitat surrounding and potentially connecting the occurrences (Y. Lee, MNFI, pers. comm., 2003).

Population Status:

Preliminary mark-recapture studies have been conducted on Copperbelly Water Snakes in northern Indiana and Ohio. Results from these studies suggest that there are no populations with great numbers of snakes (Kingsbury et al. 2003). Based on the mark-recapture data, the estimated population size of Copperbelly Water Snakes at the study site may only be in the hundreds (Kingsbury et al. 2003). Population estimates are not available for the Copperbelly Water Snake sites in Michigan.

Species Description and Life History:

The Copperbelly Water Snake has a solid dark, usually black, back with a bright orange-red underside that is visible from a side view. They grow 3 to 5 feet in length and are non-venomous. The head and eyes of the Copperbelly Water Snake are proportionally larger than those of similar species (Clay 1938; Conant 1938, 1951; Minton 1972).

To the south, the Copperbelly Water Snake is most often confused with the Yellowbelly Water Snake (*N. e. flavigaster*), a conspecific occurring to the south and west in Illinois and Kentucky. The Copperbelly Water Snake has a bright orange-red underside, whereas the Yellowbelly Water Snake has a pale yellow belly. Additionally, the copperbelly has blotches of dark pigment extending onto the ventral scales that meet or nearly meet at the belly, whereas the Yellowbelly Water Snake has dark pigment encroaching onto only the edge of the ventral scales (Conant 1938, 1949; Minton 1972; Brandon and Blanford 1995). The distinction between these subspecies is problematic. There is some variation in both subspecies, and intergrades may also occur (Brandon and Blanford 1995).

Under some circumstances, individuals from the listed populations of Copperbelly Water Snake may be confused with the Northern Water Snake (*Nerodia sipedon sipedon*). Adult Northern Water Snakes have a variable pattern on the back and sides, and a pattern of half-moon shaped spots on the belly. Adult individuals may be quite dark such that the dorsal background color blends closely with that of the bands. As a result, the snake appears uniformly dark in color especially when the skin is dry, and can be easily confused with the copperbelly. However, closer examination reveals dark crescents on the belly that are not found on the copperbelly.

There are distinctions between the dorsal coloration of the juvenile Northern Water Snakes and copperbellies, but they are subtle, and as a consequence juveniles of these species are easily confused. A challenging, but potentially useful distinguishing feature to differentiate young *Nerodia erythrogaster* (copperbellies and related species) from young *Nerodia sipedon* (northerns, midlands, etc.), is the variation in dorsal pattern. The copperbelly juveniles have few if any bands completely crossing the neck, whereas such bands occur on the front third of most *N. sipedon*. Also, a key separator is the lack of dark crescents of color on the belly, a feature which is present in species like the Northern Water Snake.

Copperbellies move frequently throughout their habitat, which consists of bottomland forest, scrub/shrub and emergent wetlands, and the uplands around them (Conant 1949; Kingsbury 1996; Roe 2002; Herbert 2003; Roe et al. 2003, 2004). Although the species is a water snake, a substantial amount (1/4-1/3) of its time is spent away from water in the terrestrial forested part of its habitat. The propensity to travel is the species' trait, but appears to be even more the case for the northern populations of copperbelly than the southern populations.

Copperbelly Water Snakes emerge from their hibernation sites in early spring and move to wetland areas. Courtship and mating primarily occurs during the spring, although it will continue into summer (Conant 1938; Martin 1982, *in* Sellers 1991; Kingsbury, pers. obs.). The species is known to form small groups in the spring and fall and has been observed swimming, feeding, courting, and resting together. The snakes frequently bask during the day on woody debris, shoreline vegetation, and muskrat lodges. Range-wide, the species forages for tadpoles, frogs, and the occasional fish (Deiner 1957, Mushinsky and Hebrard 1977, Brown 1979, Mushinsky 1987, Roe et al. 2004). Snakes commonly

move from wetland to wetland, sometimes visiting several wetlands in one day (Roe et al. 2003). This propensity to move through wooded or vegetated corridors among wetlands adds to the importance of safe, navigable uplands for this species.

In late fall, Copperbelly Water Snakes seek out overwintering locations. They hibernate in upland and floodplain forests near wetlands in crayfish burrows, debris piles, felled tree root networks, or rock piles (Sellers 1991, Kingsbury 1996, Kingsbury and Coppola 2000). During radiotelemetry studies of individuals from the listed populations, all individuals appeared to hibernate in abandoned crayfish burrows (Kingsbury 1996, Roe 2002, Herbert 2003, Kingsbury et al. 2003).

Litter size for the species as a whole ranges from 2-55; the average is 17.7, with most litters below 20 (Palmer and Braswell 1995). Copperbelly Water Snakes are viviparous which means the females give birth to live young. The young may be born in their hibernation site, and not become active until the following spring.

Recent research, including preliminary mark-recapture study, has examined Copperbelly and Northern Water Snakes in Ohio. Northern Water Snakes and Copperbelly Water Snakes are sympatric, but northernns are much more common than copperbellies. Copperbelly Water Snakes moved greater distances, used more wetlands, and spent greater time in upland areas than the Northern Water Snakes (Kingsbury et al. 2003, Roe et al. 2003). The copperbellies' long movements and large area use is likely related to its use of variable resources such as ephemeral wetlands and anuran prey (Kingsbury et al. 2003; Roe et al. 2003, 2004).

Threats:

Habitat loss and fragmentation were the primary causes of decline of the Copperbelly Water Snake and continue to be the major factors threatening the continued existence of the species. Much of the species' wetland habitat has been modified or destroyed through conversion of land to agricultural use, dredging, coal mining, stream channelization, and commercial and residential development. The Copperbelly Water Snake's use of many wetlands over a large area, and the patterns of movement associated with that use, makes them more susceptible to habitat alterations that change the spatial distribution of wetlands in the landscape, including loss of small isolated wetlands (Kingsbury et al. 2003; Roe et al. 2003, 2004).

Other factors that may be adversely affecting Copperbelly Water Snake habitat include increased sedimentation and contamination caused by fertilizer runoff. Collectors who take wild snakes also threaten the species. The Copperbelly Water Snake is collected because of its rarity, large size, unique coloration, and value in the pet trade. During their migrations, the snakes are vulnerable to predators (e.g., skunks, raccoons, raptors, and snapping turtles), especially when cleared areas such as roads, mowed areas, and farmlands interrupt their migration routes. Vehicle-caused mortality and injury has also increased as suitable habitat becomes more fragmented by transportation corridors. Weather extremes such as drought, flooding, and unusually mild or severe winters may

negatively affect the Copperbelly Water Snake. The widely held dislike for snakes by humans further threatens this species.

Key Information Needs for Recovery of the Species:

Distribution and population estimates

The number, status, and distribution of all remaining populations should be firmly established and monitored. Surveys should be continued and geographic information systems (GIS) data collected and examined to establish a baseline understanding of the status of each remaining metapopulation. Monitoring should then be conducted periodically or in response to any perturbation that might cause declines.

Ecology of juveniles

The ecology and behavior of juvenile snakes remains poorly understood; research and monitoring of juveniles is needed.

Barriers

The perception and real risk to snakes of barriers and utility of corridors must be examined. Data from previous telemetry studies suggest that roads, even rural gravel roads, and extensive farm fields form fairly complete barriers. Given that interconnected habitat fragments must be a major component of any restoration effort, barriers and corridors must be thoroughly understood.

Habitat

Suitable hibernation sites appear to be limited. Knowledge about which features define favorable sites must be obtained to facilitate protection. Additionally, parcels suitable for restoration and potential conservation agreements/easements should be identified.

The availability and creation of hibernacula must be explored.

Efficacy and practicality of headstarting and translocation

Few viable populations remain. We must explore the utility of enhancing recruitment into populations and the potential to relocate suitable individuals into restored landscapes.

The genetic relatedness of different populations to one another should be explored to clarify what is being protected and to help guide translocation efforts.

Recovery

Recovery Goal

The ultimate goal of the recovery plan will be to remove the Copperbelly Water Snake from the Federal List of Threatened and Endangered Wildlife (50 CFR 17.11).

Preliminary Recovery Objectives

The following is a list of preliminary recovery objectives. Long-term viability of the species will require protection of multiple populations by providing adequate habitat and elimination or control of threats. During the recovery planning process, we may revise or add to this list.

1. Continue study of copperbelly ecology and behavior to more fully understand the needs of the species (per Key Information Needs above).
2. Identify, protect, and restore habitat landscape units at multiple locations that are of sufficient extent and quality to support viable, sustainable populations.
3. Achieve and maintain viable numbers of copperbellies in each of the landscape units.
4. Confirm, alleviate, and monitor threats.
5. Explore scientifically based and practical means of enhancing recruitment of juveniles within and among metapopulations, including the techniques of headstarting and translocation.

The recovery plan will also identify specific, objective and measurable criteria that will describe the precise standards for measurement to determine that the species has achieved its recovery objectives and may be delisted. The criteria will thoroughly address all of the threats outlined in the five-factor analysis in the January 29, 1997, listing rule. Reclassification and delisting criteria will also be included that describe the conditions under which the species should be uplisted from threatened to endangered and delisted; these criteria will be defined in terms of both population status and threats.

Preliminary Recovery Actions

The following is a preliminary list of actions necessary to support recovery of the Copperbelly Water Snake. The recovery plan will likely incorporate these and other actions identified during the recovery planning process.

1. Conduct research to facilitate recovery efforts

- a. Conduct baseline research on the species' ecology to identify basic ecological requirements (e.g., determine habitat needs, seasonality of movements, use of potential corridors)
 - b. Develop methodology for quantifying status of individual populations
 - c. Establish criteria for population viability
 - d. Develop techniques for enhancing remaining populations by increasing recruitment and reducing mortality
 - e. Evaluate translocation as a method of population augmentation, and discuss potential for reintroductions into historic/suitable habitats
2. Identify and protect habitat necessary for recovery
 - a. Develop landscape-level habitat characterization based on known sites to interpret why these sites retain Copperbelly Water Snakes, and to predict the other areas that may contain them
 - b. Identify and assess threats at known sites
 - c. Develop and implement habitat protection programs (e.g., landowner contact, voluntary registration, and conservation agreements with landowners)
 - d. When possible, purchase habitat and increase protection through voluntary agreements, conservation easements, deed restrictions, etc.
3. Encourage management and restoration of habitat
 - a. Conduct habitat restoration and enhancement; work with State and Federal agency private land programs, conservation organizations and other cooperators on such activities as wetland restoration, buffer and travel corridor development
4. Develop and implement public education and outreach
 - a. Landowner contact, development and distribution of printed, audio, and visual materials, local and State media involvement, classroom presentations and other public speaking
5. Coordinate survey and monitoring efforts and track recovery
 - a. Continue annual surveys of known, historic, and suitable habitat
 - b. Monitor known and recently occupied sites
 - c. Demonstrate that local populations are protected from threats
 - d. Revise or update plan as needed
 - e. Develop a post-delisting monitoring plan

Preliminary Conservation Measures for Habitat Management

These conservation measures (adapted from Center for Reptile and Amphibian Conservation Management 2004) should be applied in order to avoid adverse effects to the Copperbelly Water Snake during implementation of recovery activities involving management and restoration of habitat.

For the purposes of these conservation measures, the “active season” of the copperbelly is approximately April 15 to October 15. These dates are approximate. The actual active season will depend on weather patterns and local conditions. Furthermore, copperbellies in more southerly locations have been known to emerge during winter warm spells.

Wetlands and Wetland Complexes

Copperbellies are highly mobile and frequently move considerable distances among multiple wetlands. Protection of a large interconnected mosaic of wetlands is important for this species.

Wetland Conservation and Management: Protecting What Remains

- ✓ Preserve and protect *all* wetlands in areas targeted for copperbelly conservation. Shallow water wetlands, including ephemeral or seasonal wetlands, should not be drained or modified to form deeper systems.
- ✓ Manage wetland complexes rather than individual wetlands. Copperbellies are not found in areas without multiple wetlands. They routinely travel among them, sometimes visiting several in a day.
- ✓ Wetlands should not be stocked with fish. Introducing fish that prey on amphibians may impact the main prey base of the copperbellies.
- ✓ The activity of beavers should not be discouraged unless clearly detrimental. Over time, beaver activity can create good copperbelly habitat.
- ✓ Debris such as logs and flotsam should be left on-site rather than removed, as they can provide important structures for cover and basking.
- ✓ Water should not be drawn down from wetlands during the winter. A high water table prevents the ground from freezing and protects copperbellies during hibernation.
- ✓ Protection of known hibernacula is extremely important. Copperbellies typically hibernate in crayfish burrows that are generally above the water table in the fall, but may flood in the spring. Copperbellies exhibit fidelity to hibernation areas. They are not found in recently restored areas that appear to have suitable habitat for hibernation, suggesting lost hibernation sites are not easily replaced.

Wetland Restoration and Creation: Enhancing Suitable Habitat

- ✓ Wetland restoration is important. A high density of suitable wetlands (wetland complex) may be the most important habitat component for recovery.
- ✓ When designing and constructing wetlands within the range of copperbellies, emphasis should be placed on shallow systems (less than 30 cm in depth).
- ✓ Habitat enhancement should focus on creating wetland complexes.
- ✓ Wetlands should not have steep banks. Slope ratios of 1:5 or better are preferred, and much shallower slopes are most advantageous.
- ✓ Most of the shoreline should be of shallow slope, so that as the wetland dries extensive areas of shallow water are present. Such habitat provides good foraging habitat for the copperbellies.
- ✓ Shorelines of constructed wetlands should be complex, rough-graded and undulating in form rather than being relatively straight and well-manicured. Copperbellies use shorelines, not the middle, of wetlands.
- ✓ Hydrology should be spatially and temporally variable, including numerous wetlands that are ephemeral in nature and dry down completely every 1-3 years. This inhibits the development of fish populations and favors valuable vegetation.
- ✓ Earth work in areas with saturated soils should occur well within the copperbelly's active season to preclude even indirectly impacting hibernating snakes and so that snakes are able to move away from activities.
- ✓ Use native vegetation when replanting. Buttonbush (*Cephalanthus occidentalis*) should be planted in areas that tend to stay flooded. For areas that tend to dry down, bottomland forest trees should be planted.
- ✓ When feasible, the water supply for wetlands should be fed by spring or surface runoff rather than floodwaters from riverine systems. River floodwater is sediment-laden and may be otherwise of questionable water quality. It will also contain fish. In many cases such influxes are unavoidable, so to minimize the influx of sediment with the water, settling areas should be included in wetland system designs.

Adjacent Uplands

Copperbellies spend a considerable portion of their time in upland areas, sometimes at substantial distances from wetlands. Copperbellies have been shown to use upland areas as corridors to other wetland patches, for resting, basking, and refugia sites, and occasionally for hibernation. Adequate upland must be available to satisfy these needs. Upland areas surrounding wetlands should principally be closed canopy forest but include some open terrain, providing necessary forest edge.

- ✓ Habitat buffers, consisting of a band of vegetation along the perimeter of the wetland, should be maintained around areas regularly used by copperbellies. At least 20 m of ground around wetlands should not be farmed or similarly

manipulated. Manipulating uplands right up to the wetland edge could have devastating effects, not only by direct mortality, but also by loss of habitat and destruction of hibernation areas.

- ✓ Extensive manipulation of areas within 100 m of wetlands is best conducted during the copperbelly's inactive season, when snakes will be out of harm's way in their hibernacula.
- ✓ Timber management should be conservative around and among wetlands in areas with copperbellies. Snakes in the upland need forest edge habitat, but extensive openings are not needed. Most benefits likely occur with opening widths of approximately twice the height of the surrounding trees.
- ✓ Agricultural fields should be offset from forest instead of running right up to the tree line. An unfarmed strip of 3-5 m (10-20 feet) in width between the forest and agricultural field would confer most of the benefits of an even broader buffer, because the snakes tend to stay close to the woods.
- ✓ Site preparations for any activity are best scheduled during the inactive season whenever possible.
- ✓ Suitable corridors are important to protect snakes as they move among wetlands. Corridor habitats include riparian buffer strips, short stretches of upland forest, and narrow stretches of ephemeral wetland complexes. Corridors should be as short and as wide as possible (length:width ratio of at least 1:5). At the simplest level, corridor "design" may involve avoiding intensive farming of land among wetlands.
- ✓ Agricultural practices adjacent to copperbelly wetlands, as well as in travel corridors, could favor crops that require the least amount of manipulation during the active season. Similarly, any maintenance activities on these areas, such as brush hogging or mowing, should be implemented in winter, before the snakes emerge from hibernation.
- ✓ Crop harvesting or agricultural treatments should commence in the interior of fields and move outwards towards wetlands and forest. This will minimize trapping snakes which may otherwise be able to escape.

ESA Section 7, Section 9, and Section 10 Considerations

Section 7 – Consultation with Federal Agencies

Section 7 of the ESA requires all Federal agencies to consult with the USFWS on actions that may affect listed species. This includes actions that are federally permitted, authorized, or funded by a Federal agency. This consultation process promotes interagency cooperation in finding ways to avoid or minimize adverse effects to listed species. If a Federal action is likely to adversely affect any listed species, the Federal action agency must enter into formal consultation with the USFWS.

The consultation process is intended to ensure that the action is not likely to jeopardize the continued existence of listed species, nor destroy or adversely modify critical habitat. Critical habitat has not been designated for the Copperbelly Water Snake.

The following are some examples of potential Federal actions that may affect the Copperbelly Water Snake and may require Section 7 consultation. This list is not meant to be an exhaustive; Federal agencies must consult with USFWS on all actions that may affect listed species.

Example of Federal Action

Habitat Restoration Programs

Road Work/Highway Projects

Wetland 404 Permit Issuance

Incidental Take & Recovery Permits

Section 6 Funding, Other Grant Programs

Invasive Species Control

Federal Agencies

Natural Resource Conservation Service,
USFWS

Federal Highway Administration

Army Corps of Engineers

USFWS

USFWS

US Department of Agriculture - Animal
and Plant Health Inspection Service, Forest
Service

Section 9 – Prohibition against Take

Section 9 of the ESA prohibits any person from “taking” federally listed threatened and endangered species. The term “take” is defined to include harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting these species. It is also unlawful to attempt such acts, solicit another to commit such acts, or cause such acts to be committed. Regulations implementing the ESA (50 CFR 17.21) define “harm” to mean an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation that results in killing or injuring wildlife by significantly impairing essential behavioral patterns such as breeding, feeding, or sheltering.

Section 10 – Research and Recovery Permits and Habitat Conservation Plans

Section 10(a)(1)(A) of the ESA provides for permits to authorize activities otherwise prohibited under Section 9 for scientific purposes or to enhance the propagation or survival of a listed species. Section 10 (a)(1)(B) permits can also provide for take that is incidental to an otherwise lawful activity, provided certain conditions have been met.

There are three types of Section 10 permits, described below:

Recovery Permits - 10(a)(1)(A)

These permits are issued to allow for take as part of activities intended to foster the recovery of a listed species. Often these permits are used to allow for scientific research on a listed species in order to better understand the species' long-term survival needs. These permits typically take 90 days to issue after receipt of an application and have a 30 day public notice requirement. These permits are intended for recovery of listed species, so these permits are issued only for activities that result in a long-term benefit to the species. Several recovery permits have already been issued that allow for research and monitoring to occur for the Copperbelly Water Snake.

Enhancement of Survival Permits, Safe Harbor Agreement - 10(a)(1)(A)

These permits are issued to non-Federal landowners participating in Safe Harbor Agreements. The Safe Harbor Program encourages voluntary management for listed species to promote recovery on non-Federal lands by giving assurances to the landowners that no additional future regulatory restrictions will be imposed. There are currently no Safe Harbor Agreements in place for the Copperbelly Water Snake.

Incidental Take Permit, Habitat Conservation Plan - 10(a)(1)(B)

These permits are required when non-Federal activities will result in take of threatened or endangered species. These permits are often issued when a landowner seeks to develop land, and the development activity is likely to adversely affect a listed species. A Habitat Conservation Plan, or HCP, must accompany the application for the permit. The HCP is to ensure that the permitted take is minimized and/or mitigated to the extent practicable. There are currently no HCPs in place for the Copperbelly Water Snake.

Recovery Plan Preparation

Recovery Plan Development:

The USFWS, East Lansing Field Office, will initiate preparation of the Recovery Plan for the Copperbelly Water Snake in early 2005. This Recovery Outline is the initial step in the planning process and will provide a strategy and timeline for the recovery planning effort.

Scope of the Recovery Effort: single-species.

Recovery Plan Authorship and Coordination:

The USFWS has contracted primary authorship of the Recovery Plan with a species expert, Dr. Bruce Kingsbury. During the recovery planning process, the USFWS will seek input from all persons interested in or potentially affected by recovery of the Copperbelly Water Snake. Interested individuals will serve as a source of information and may provide additional perspective on issues of importance to recovering the species. In addition to appropriate State agencies, stakeholders may include other Federal agencies, non-government organizations, species experts, private landowners, and members of the general public that may be able to assist with recovery and have an interest in protection of this species.

Coordination with the State agencies of Michigan, Ohio, and Indiana will be critical to implementing recovery actions. In addition, researchers and species experts will be important contributors to the planning process. Many Copperbelly Water Snake occurrences are on private lands, so coordination with private landowners will also be essential.

Stakeholder Involvement:

The Service encourages stakeholder involvement throughout the recovery planning process. Information will be provided to the public, including distribution of this recovery outline and other information on the Copperbelly Water Snake, at various meetings and events, and on our internet web site. We will also provide public notification regarding opportunities for public involvement in planning and implementation. A public comment period will open when a notice announcing the availability of the draft Recovery Plan is published in the *Federal Register*. In addition, we will seek peer review from at least three independent species experts during the public comment period.

Recovery Plan Timeframe:

Draft Recovery Plan anticipated: September 2005

Final Recovery Plan anticipated: December 2005

Literature Cited

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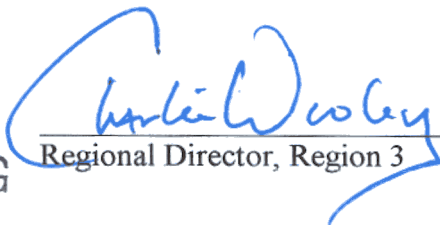
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